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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,831

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Seong Ho Yoon

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EXAMINER

ZIMMER, ANTHONY J

ART UNIT

PAPER NUMBER

1793

NOTIFICATION DATE

DELIVERY MODE

01/15/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com

### Office Action Summary

**Application No.**

10/531,831

**Applicant(s)**

HO YOON ET AL.

**Examiner**

ANTHONY J. ZIMMER

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker '849.

In regard to claims 1 and 2, in general chemistry, it has been well known that carbon nanostructures are composed of hexagonal carbon planes. See PTO-892: evidentiary document US5653951, column 4, lines 37-38.

BAKER '849 teaches spacing between graphite sheets of 0.335 nm – 1.1 nm. See BAKER '849 [0019]. Though the other structural and property limitations of the claims are not explicitly taught in BAKER '849, the process of making the instant product is substantially identical to the process used in BAKER '849. In particular, both processes utilize catalytic pyrolysis using a reduced bulk or particulate catalyst of iron with nickel. See instant pages 13-15 and Baker '849 [0020]-[0024]. Thus, since the processes of preparing the nanofibers are substantially identical, the product must also be substantially identical and have substantially identical properties. See MPEP 2112.01.

[Even furthering this conclusion, many angles between the carbon planes and the length direction of the fiber and the fact that the angle depends on the catalyst used are known in the art, and BAKER '849 shows this in Figure 1 (notice the various angles produced) and Example 6, Table VI (notice the various structures characterized by various angles in Figure 1 formed with different catalysts). Furthermore, nodes and knots including ones that periodically connect two fibers are a common defect in the formation of carbon nanostructures which necessarily involve "inter-fiber" force or Van der Waals force since carbon molecules are involved on a molecular level and Van der Waals forces are inevitable due to constant electron motion. See evidentiary documents: Figure 2 of US6156256 and Figure 5 of US6333016. There is also nothing of record

that suggests the formation of an unexpected, different product from the instant process. The claimed product is a description of the product of a known process with a common defect.]

***Response to Arguments***

Applicant's arguments filed 11/05/2008 have been fully considered but they are not persuasive.

Applicant argues that Baker is silent in regard to the pair structure limitation in claims 1 and 2, and that the examiner did not address this limitation in the Final Rejection of 6/5/2008.

However the limitation is addressed on page 3 of the Final Office action of 6/5/2008 where it is acknowledged that the Baker reference is silent in regard to other limitations of the claims, i.e. said pair structure. But, since the processes of producing the nanofibers as disclosed in Baker is substantially identical to that of the process of producing the instant products, the products must also be substantially identical absent a showing otherwise.

Applicant argues that since the product is claimed defining its properties and not the process of making, that a rejection relying on inherency (and MPEP 2112.01) is improper.

However, MPEP 2112.01 does not require that the product be claimed in a product-by-process claim. Moreover, once a reference teaching a product appearing to be substantially identical is made the basis of a rejection, the burden shifts to the applicant to show an unobvious difference. See MPEP 2112.

Applicant argues that the product of Baker is "anything but a pair structure."

However, as noted above, Baker is silent in regard to said pair structure, and does not disclose that a pair structure is not formed.

Applicant argues that since Baker is silent in regard to pair structure and does not disclose any process steps intended or attempted to produce the pair structure that the product of Baker does not necessarily possess the characteristics of the claimed product.

However Baker discloses substantially identical process steps as that instantly disclosed thus producing substantially identical products. Applicant has not shown any differences between the prior art process and that instantly disclosed that would lead to a different, unobvious product. Whether or not it was intended in Baker to make a pair structure is also of no moment because substantially identical processes produce substantially identical products, and the issue at hand is not whether or not Baker intended to produce a pair structure, but rather whether or not a pair structure was formed. Inherent features need not be recognized at the time of the invention. See MPEP 2112. Applicant has not established that the process of Baker does not produce a pair structure.

Applicant argues that the instant process is different from that of Baker.

However, the processes do not differ in any way that would produce a different product, and applicant has not established otherwise.

First, applicant submits that the present application uses Fe-Mn catalysts and that Baker uses Fe-Ni, Fe-Cu, or Fe catalysts. However, the instant specification

discloses that nickel can also be used in place of manganese. See instant page 30, lines 15-21.

Second, applicant submits that the instant process reduces the catalyst for 0.5-40 hours at 450-550°C in a gas mixture of 1-40 v/v% hydrogen and nitrogen, argon, or helium in contrast to Baker's reduction in hydrogen for 20 hours at 400°C. However, both process function to reduce the catalytic materials, and it has not been shown that a different product would be produced as a result of any differences in this regard.

The presented *prima facie* case of inherency can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed products. No evidence in this regard has been presented. Also, attorney arguments cannot take the place of evidence in proving unexpected results or inoperability of the prior art. See MPEP 716.01(c).

### ***Conclusion***

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY J. ZIMMER whose telephone number is (571)270-3591. The examiner can normally be reached on Monday - Friday 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ajz

/Steven Bos/  
Primary Examiner, Art Unit 1793